

REMARKS

Claims 1, 2, and 4-9 were presented and examined. In response to the Office Action, Claims 1, 6, 8, and 9 are amended. Claim 3 was previously cancelled. Claims 1, 2 and 4-9 remain in the Application. Reconsideration of the pending claims is respectfully requested in view of the above amendment and the following remarks.

I. Claims Rejected Under 35 U.S.C. § 103(a)

Claims 1, 2 and 4-9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 6,260,990 to Dejaco (“Dejaco,” previously cited) in view of U.S. Patent 6,208,958 to Cho, et al. (“Cho,” previously cited) and further in view of U.S. Patent 6,615,174 to Arslan, et al. (“Arslan,” previously cited) and U.S. Patent 5,371,853 to Kao, et al. (“Kao,” previously cited). Applicants respectfully traverse the rejection.

Claims 1, 8 and 9 are amended to incorporate a portion of Claim 6. The amended limitations more specifically points out that bandwidth conversion is performed by both the formant parameter translating means and the excitation parameter translating means, and that the excitation signal having the converted bandwidth is output to a perceptual weighing filter constructed by the excitation parameter translating means. Support for the amendment can be found, for example, at Figure 3 of the present application.

Dejaco discloses a formant parameter translator 620 and an excitation parameter translator 630 (Figure 6). The excitation parameter translator 630 further includes a speech synthesizer 606 and a searcher 608. The Examiner recognizes that Dejaco does not disclose formant bandwidth conversion, but relies on Cho and Arslan for disclosing the formant bandwidth conversion. However, Dejaco in view of Cho and Arslan does not teach or suggest that bandwidth conversion is performed on both formant parameters and excitation signals.

Further, the disclosure of Cho generally relates to an up-sampling technique for accurately detecting pitch information. Cho is non-analogous art because it is not related to trans-coding as recited in Claim 1.

Arslan discloses a technique for formant bandwidth compression/extension (Fig. 5). The technique compresses or extends a width of each formant component (e.g., a peak where energy is accumulated) within a specific frame of a signal. By contrast, Claim 1 recites compression or extension of bandwidth of entire signals, e.g., extension from 0~4 KHz to 0~8 KHz bandwidth, or compression from 0~8 KHz to 0~4 KHz bandwidth.

Kao is relied on for disclosing the use of perceptual weighting filter. Kao discloses a perceptual weighting filter used in a conventional codebook excited linear predictive (CELP) type codec. However, Kao does not disclose that the excitation signal having the converted bandwidth is output to the perceptual weighting filter. Rather, Kao discloses that the perceptual weighting filter receives speech information and the output of LPC analyzer. There is nothing in Kao that indicates that the perceptual weighting filter receives an excitation signal having a converted bandwidth.

Additionally, Applicants submit that the combination of the references is based on hindsight reconstruction. The references do not teach or suggest the structure of the recited apparatus and the flow of the recited operations. Each of the references has been relied on for disclosing one or more of the recited elements. However, there is no teaching or suggestion, in the references or knowledge possessed by a person of ordinary skill in the art, indicating that the elements are interconnected as recited in the amended claims. Thus, the amended claims are non-obvious over the cited references.

For at least the foregoing reasons, Applicants submit that independent Claims 1, 8 and 9 and dependent Claims 2 and 4-7 are non-obvious over the cited references. Accordingly, withdrawal of the rejection of Claims 1, 2 and 4-9 is requested.

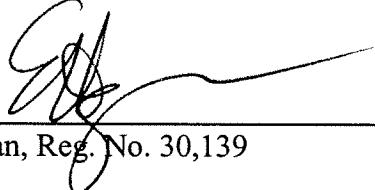
CONCLUSION

In view of the foregoing, it is believed that all claims are now in condition for allowance and such action is earnestly solicited at the earliest possible date. If there are any additional fees due in connection with the filing of this response, please charge those fees to our Deposit Account No. 02-2666.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

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Eric S. Hyman, Reg. No. 30,139

1279 Oakmead Parkway
Sunnyvale, CA 94085-4040
(310) 207-3800

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Alexandra Y. Caluen

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